

SUPERO[®]

SC515U Chassis Series



SC515-280UB

USER'S MANUAL

1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SC515 1U chassis. Installation and maintenance should be performed by experienced technicians only.

Supernano's SC515U chassis features a unique and highly-optimized design for dual-core Xeon platforms. The chassis is equipped with a 280W high-efficiency power supply for superb power savings. High-performance fans provide ample optimized cooling for FB-DIMM memory modules in a 1U form factor.

This document lists compatible parts which were available when this document was published. Always refer to the our Web site for updates on supported parts and configurations.



Important: This manual describes the installation and configuration of the SC515U model chassis. Refer to www.supernano.com for other chassis model manuals.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with this chassis and describes the main features. This chapter also includes contact information.

Chapter 2: System Safety

This chapter lists warnings, precautions, and system safety. You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed before installing and servicing this chassis.

Chapter 3: Chassis Components

Refer to this chapter for details on this chassis model including the fans, bays, airflow shields, and other components.

Chapter 4: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 5: Chassis Setup and Maintenance

Follow the procedures given in this chapter when installing, removing, or reconfiguring your chassis.

Chapter 6: Rack Installation

Refer to this chapter for detailed information on chassis rack installation. You should follow the procedures given in this chapter when installing, removing or reconfiguring your chassis into a rack environment.

Appendix A: Cables, Screws, and Accessories

Appendix B: Power Supply Specifications

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Appendix A Cables, Screws, and Accessories

Appendix B Power Supply Specifications

Chapter 1

Introduction

1-1 Overview

Supermicro's SC515U 1U chassis features a unique and highly-optimized design. The chassis is equipped with a high-efficiency power supply in a small form factor for optimized space efficiency.

1-2 Shipping List

Part Numbers

Please visit the Supermicro Web site for the latest shipping lists and part numbers for your particular chassis model at www.supermicro.com

SC515U Chassis				
Model	CPU	HDD	I/O Slots	Power Supply
SC515-280UB	Pentium D or AMD Opteron 1000	1x 3.5" or 2x 2.5" Fixed	2 FH AOC slots, 1 inter- nal LP AOC slot*.	280W

* Internal low-profile slots require a customized bracket design.

1-3 Chassis Features

The SC515 1U high-performance chassis includes the following features:

CPU

The SC515U Chassis supports both Intel Pentium D and AMD Opteron 1000 series processors. Please refer to the motherboard specifications pages on our web site for updates on supported processors.

I/O Expansion Slots

The SC515U chassis includes two full-height add-on card slots and one internal low-profile add-on card slot. The internal low-profile add-on card requires a customized bracket for each card.

1-4 Contacting Supermicro

Headquarters

Address: Super Micro Computer, Inc.
980 Rock Ave.
San Jose, CA 95131 U.S.A.

Tel: +1 (408) 503-8000

Fax: +1 (408) 503-8008

Email: marketing@supermicro.com (General Information)
support@supermicro.com (Technical Support)

Web Site: www.supermicro.com

Europe

Address: Super Micro Computer B.V.
Het Sterrenbeeld 28, 5215 ML
's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390

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rma@supermicro.nl (Customer Support)

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4F, No. 232-1, Liancheng Rd.
Chung-Ho 235, Taipei County
Taiwan, R.O.C.

Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3991

Web Site: www.supermicro.com.tw

Technical Support:

Email: support@supermicro.com.tw

Tel: 886-2-8226-1900

1-5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (<http://www.supermicro.com/support/rma/>).

Whenever possible, repack the chassis in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the chassis securely, using packaging material to surround the chassis so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 2

System Safety

2-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following the steps in order given should enable you to have your chassis set up and operational within a minimal amount of time. This quick set up assumes that you are an experienced technician, familiar with common concepts and terminology.

2-2 Warnings and Precautions

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, file a damage claim with carrier who delivered your system.

Decide on a suitable location for the rack unit that will hold that chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and eletromagnetic fields are generated.

You will also need it placed near at least one grounded power outlet. When configured, the SC515U chassis includes one power supply.

2-3 Preparing for Setup

The SC515U chassis includes a set of rail assemblies, including mounting brackets and mounting screws you will need to install the systems into the rack. Please read this manual in its entirety before you begin the installation procedure.

2-4 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SC515U from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high-voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and the DVD-ROM and floppy drives (not necessary for hot swappable drives). When disconnecting power, you should first power down the system with the operating system and then unplug the power cords from all the power supply modules in the system.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power, if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.
- Serverboard battery: CAUTION - There is a danger of explosion if the on-board battery is installed upside down, which will reverse its polarities. This battery must be replaced only with the same or an equivalent type, recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- DVD-ROM laser: CAUTION - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

2-5 General Safety Precautions

- Keep the area around the chassis clean and free of clutter.
- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

2-6 System Safety

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Chapter 3

Chassis Components

3-1 Overview

This chapter describes the most common components included with your chassis. Some components listed may not be included or compatible with your particular chassis model. For more information, see the installation instructions detailed later in this manual.

3-2 Components

Chassis

Depending on the model, the SC515U chassis includes a power supply, chassis fans, and if applicable, an HDD backplane. For the latest shipping lists, visit our Web site at: <http://www.supernmicro.com>.

Fans

The SC515U chassis accepts up to five 40x56mm counter-rotating system fans powered by the motherboard. These fans are 1U high and are powered by 4-pin connectors.

Mounting Rails

The SC515U can be placed in a rack for secure storage and use. To setup your rack, follow the step-by-step instructions included in this manual.

Power Supply

Each SC515U chassis model includes a high-efficiency power supply rated at 280 Watts. In the unlikely event your power supply fails, replacement is simple and can be done with a Phillips head screwdriver.

Air Shroud

Air shrouds are shields, usually plastic or mylar, that funnel air directly to where it is needed. Always use the air shroud included with your chassis. Please see the section of this manual titled Installing the Air Shroud for specific information on the use of an air shroud in your chassis.

3-3 Where to get Replacement Components

Though not frequently, you may need replacement parts for your system. To ensure the highest level of professional service and technical support, we strongly recommend purchasing exclusively from our Supermicro Authorized Distributors / System Integrators / Resellers. A list of Supermicro authorized distributors / System Integrators / Resellers can be found at: <http://www.supermicro.com>. Click the Where to Buy link.

Chapter 4

System Interface

4-1 Overview

There are several LEDs on the control panel as well as others on the drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. Most SC515U models have two buttons on the chassis a control panel: a reset button and an on/off switch. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

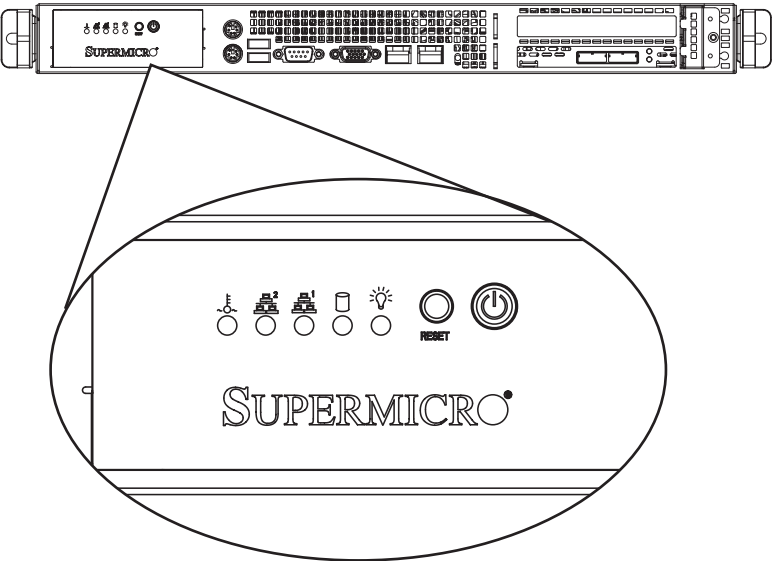
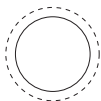


Figure 4-1: Chassis LEDs and Buttons

4-2 Control Panel Buttons

There are two push-buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.



- **Reset:** The reset button is used to reboot the system.



- **Power:** The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.

4-3 Control Panel LEDs

The control panel located on the front of the SC515U chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



- **Overheat/Fan Fail:** When this LED flashes, it indicates a fan failure. When continuously on (not flashing), it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure that all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly. This LED will remain on as long as the overheat condition exists. When flashing, it indicates a fan failure. In the event of a fan failure, follow the instructions given in Chapter 5: Chassis Setup and Maintenance, on checking and replacing system fans.



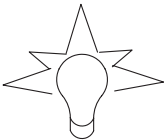
- **NIC2:** Indicates network activity on GLAN2 when flashing.



- **NIC1:** Indicates network activity on GLAN1 when flashing.



- **HDD:** Indicates IDE channel activity. SAS/SATA drive, SCSI drive, and/or DVD-ROM drive activity when flashing.



- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

Notes

Chapter 5

Chassis Setup and Maintenance

5-1 Overview

This chapter covers the steps required to install components and perform maintenance on the chassis. The only tool you will need to install components and perform maintenance is a Phillips and flathead screwdriver. Print this page to use as a reference while setting up your chassis

5-2 Installation and General Maintenance

The following subjects are covered in the Installation and General Maintenance section of this manual:

- Removing the Chassis Cover
- Removing and Installing the Hard Drive
- Installing the Motherboard
- Expansion and Add-on Card Slot Setup
- Systems Fans
- Replacing the Power Supply



Certain motherboards and heatsinks may not be compatible with this chassis. Before installation, review the motherboard installation procedures in this chapter.



Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: System Safety and the warning/precautions listed in the setup instructions.

5-3 Removing the Chassis Cover

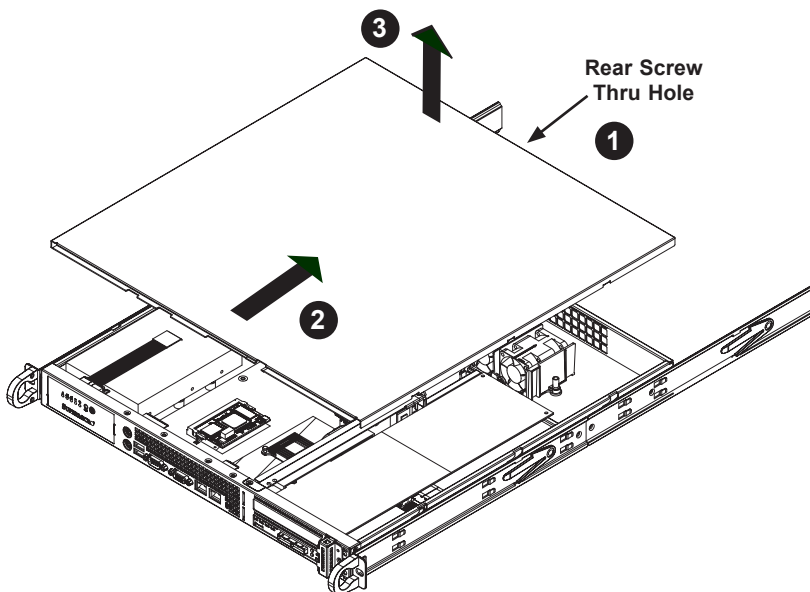


Figure 5-1: Removing the Chassis Cover

Removing the Chassis Cover

1. Remove the screw on the rear of the chassis cover which is holding the cover in place. Set the screw aside for future use.
2. Slide the chassis cover back towards the rear of the chassis.
3. Lift the cover up and off of the chassis.



Warning: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

5-4 Installing Hard Drives

The SC515 chassis can support either one 3.5" hard drive (included), or up to two 2.5" hard drives (optional). When installing 2.5" hard drives, it is necessary to attach a 2.5" hard drive tray, which can be purchased separately, to the existing 3.5" hard drive tray, which is included with the chassis.

To purchase 2.5" hard drives and the 2.5" hard drive tray, please refer to Appendix A: Cables, Screws and Accessories, at the back of this manual, for part number information. Then visit the Supermicro Web site at www.supermicro.com and click the "Where to Buy" link.

The following sections include instructions for installing both a standard single 3.5" hard drive, and for installing the optional single or dual 2.5" hard drives.

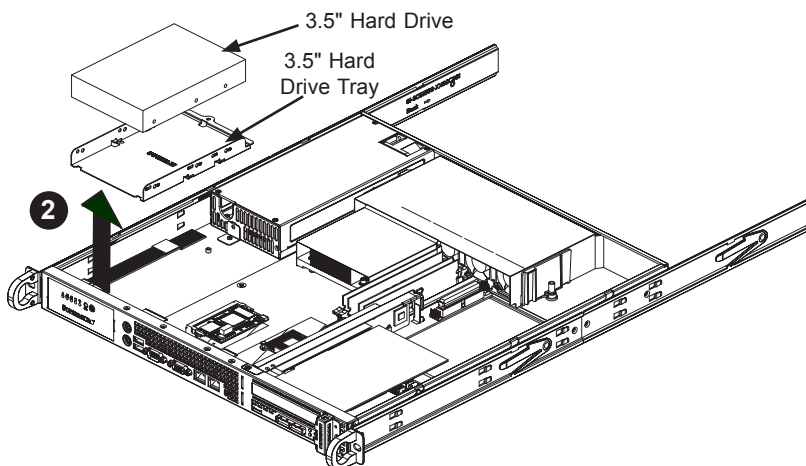


Figure 5-2: Removing a 3.5" Hard Drive and Tray

Removing and Installing a 3.5" Hard Drive

Before adding or replacing a hard drive, you must remove the chassis cover and HDD tray from the chassis. Note that removing the cover when the system is running will degrade its performance.

Removing the 3.5" Hard Drive Tray

1. Disconnect the chassis from any power source.
2. Disconnect the wiring from the hard drives.
3. Remove the screws securing the hard drive tray to the chassis and set them aside for later use.
4. Carefully lift the hard drive tray up and out of the chassis.

Installing the 3.5" Hard Drive

1. Insert the 3.5" hard drive into the hard drive tray.
2. Secure the hard drive to the hard drive tray using the screws provided.
3. Secure the hard drive tray to the chassis using the screws previously set aside.
4. Connect the wiring to the hard drive.

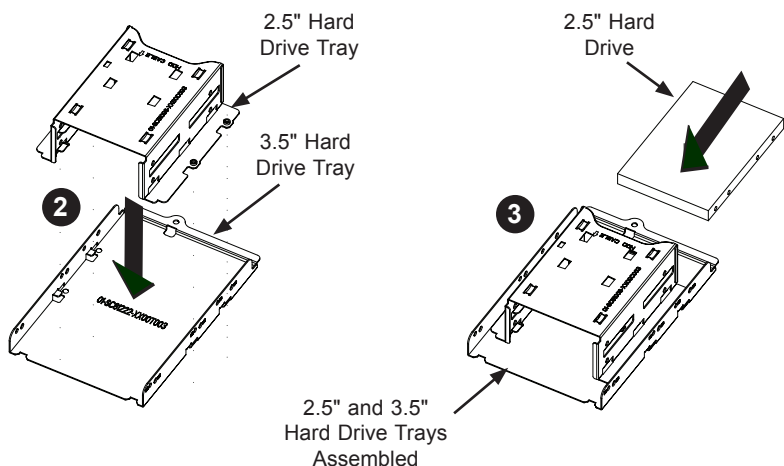


Figure 5-3: Installing the 2.5" Hard Drives and Tray into the Tray Assembly

Installing 2.5" Hard Drives

In order to utilize single or dual 2.5" hard drives, you will need the following:

- 3.5" hard drive tray (included with the chassis)
- One or two 2.5" hard drives (Purchased separately).
- One 2.5" hard drive tray (Purchased separately)

Installing the 2.5" Hard Drives

1. Remove the default 3.5" hard drive tray from the chassis as described in the previous section.
2. Secure the 2.5" hard drive tray to the 3.5" hard drive tray using the four screws provided.
3. Insert the two 2.5" hard drives into the hard drive tray assembly.
4. Secure the 3.5" hard drive tray back into the chassis using the screws previously put aside.
5. Connect the wiring to the hard drives.

5-5 Installing the Motherboard

Chassis Standoffs

Standoffs prevent short circuits by securing space between the motherboard and the chassis surface. The SC515U chassis includes permanent and removable standoffs in locations used by different motherboards. These standoffs accept the rounded Phillips head screws included in the SC515U accessories packaging. Remove any unnecessary stand-offs that are not required, prior to installing the motherboard.

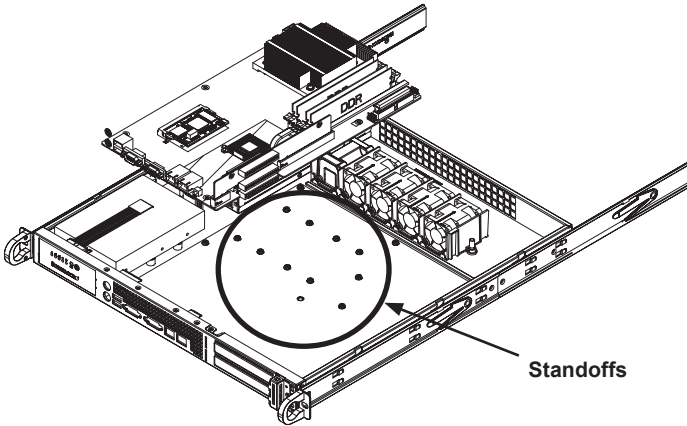


Figure 5-4: Installing the Motherboard using Chassis Standoffs

Note:

The CPU, heatsink and motherboard shown above are for reference only and are not included with the SC515U chassis.

Installing the Motherboard

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, precautions, and cable connections. The heatsinks mount differently on different motherboards. Refer to your specific motherboard's documentation for information on installing the heatsink.
2. Unplug the chassis from its power source and open the chassis cover.
3. Lay the chassis on a flat surface.
4. Align the motherboard with the chassis standoffs and carefully, place the motherboard in the chassis. Make sure rear ports line up with the I/O shield. Check the documentation for your specific motherboard. Some motherboards may require additional standoffs.
5. Secure the motherboard to the chassis using the Phillips round-head screws supplied with the accessories box.
6. Connect the cables between the motherboard, backplane, chassis, front panel, and power supply, as needed.
7. Secure the CPU(s), heatsinks, and other components to the motherboard as described in the motherboard documentation.

5-6 Add-on Card/Expansion Slot Setup

SC515U chassis includes slots for two full-height add-on cards and one internal low-profile add-on card. The riser card allows the add-on card to fit within the small 1U form.

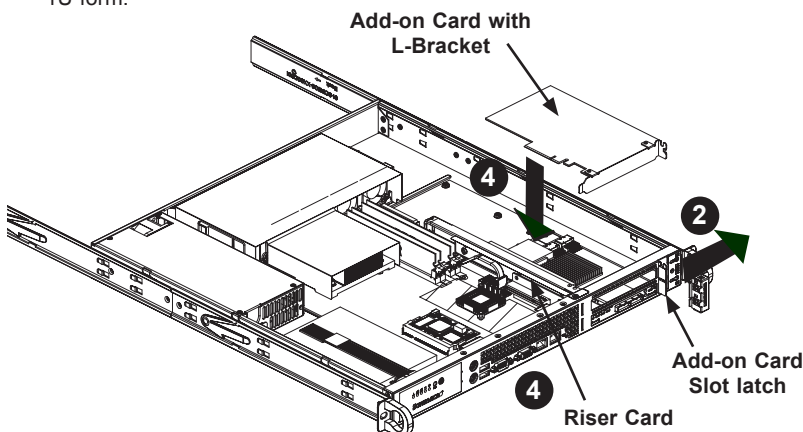


Figure 5-5: Installing an Add-On Card

Installing Add-on and Expansion Cards

1. Disconnect the power supply, lay the chassis on a flat surface, and open the chassis cover.
2. Push the add-on card slot latch outward, towards the right-hand side of the chassis.
3. Slide the add-on card slot shield out of the slot opening and remove it from the chassis.
4. Slide the add-on card with the L-bracket into the add-on card slot, simultaneously plugging it into the riser card.
5. Ensure that the add-on card slot latch is closed, securing the add-on card in place.

Note: The internal low-profile slot requires a customized bracket for each add-on card.

5-7 Installing the Air Shroud

The air shroud helps cool the chassis by directing heated air through the rear of the chassis. An air shroud is required when using a passive heatsink on the motherboard. When using an active heatsink, no air shroud is required.

When installing the air fan, be aware of the following:

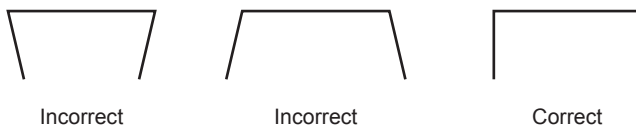


Figure 5-6: Air Shroud Placement

- The air shroud is designed to fit within the chassis. The sides of the air shroud should remain straight in relation to the top. Do not fold or bend the air shroud.
- The air shroud has perforated tabs that can be removed if motherboard components prevent proper air shroud installation. Do not remove a tab unless it is necessary.

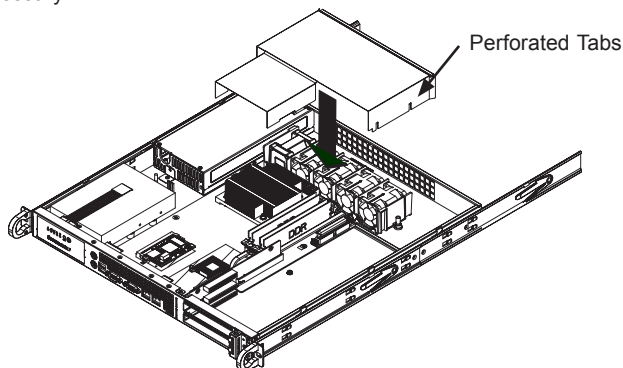


Figure 5-7: Air Shroud for the SC515U Chassis

Installing the Air Shroud

1. Confirm that the air shroud matches your chassis model.
2. Place the air shroud in the chassis. The shroud sits over the heatsink and the system fans. If necessary, remove some perforated tabs to ensure a snug fit.

Checking the Server Air Flow

Checking the Server Air Flow

1. Make sure there are no objects to obstruct airflow in and out of the server.
2. Do not operate the server without drives or drive trays in the chassis. Use only recommended server parts.
3. Make sure no wires or foreign objects obstruct the air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.
4. The control panel LEDs inform you of the system status. See the System Interface section of this manual for details on the LEDs and the control panel buttons.
5. In most cases, the chassis power supply and fans are pre-installed. If you need to install fans, see the Systems Fans section of this manual. If the chassis will be installed into a rack, continue to the next chapter for rack installation instructions.

5-8 System Fans

The SC515U chassis can support up to five heavy-duty counter-rotating fans. These fans circulate air through the chassis as a means of lowering the chassis internal temperature. Typically, the three fans included with the SC515 chassis provide sufficient cooling for the system. However, the system fan tray includes space for up to two additional fans, should additional cooling be required.

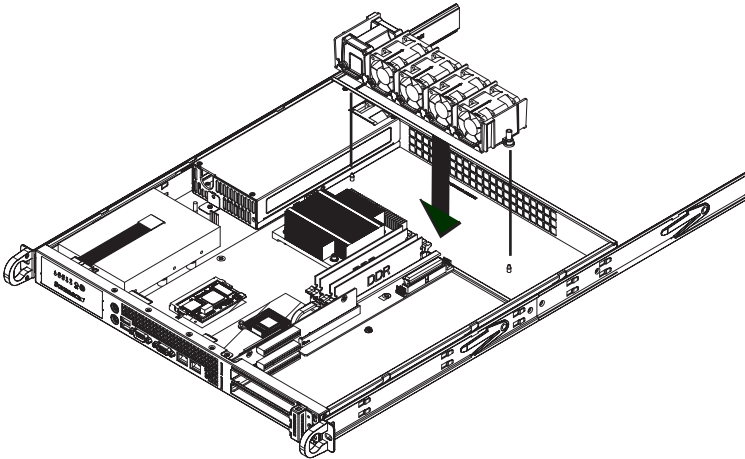


Figure 5-8: Placing the System Fan Tray

Replacing A System Fan

1. If necessary, open the chassis while the power is running to determine which fan has failed. (Never run the server for an extended period of time with the chassis open.)
2. Remove the failed fan's power cord from the serverboard.
3. Lift the failed fan upwards and out of the system fan tray.
4. Prepare the new fan for installation by ensuring that the four rubber pins on the fan are attached securely.
5. Place the new fan into the vacant space. Make sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
6. Confirm that the fan is working properly and replace the chassis cover.

5-9 Power Supply

The SC515U chassis has a 280 Watt power supply. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Power Supply Failure

In the unlikely event that the power supply unit fails, the system will shut down and you will need to replace it.

Replacement units can be ordered directly from Supermicro (See the contact information located in the Preface of this manual) or an authorized reseller.

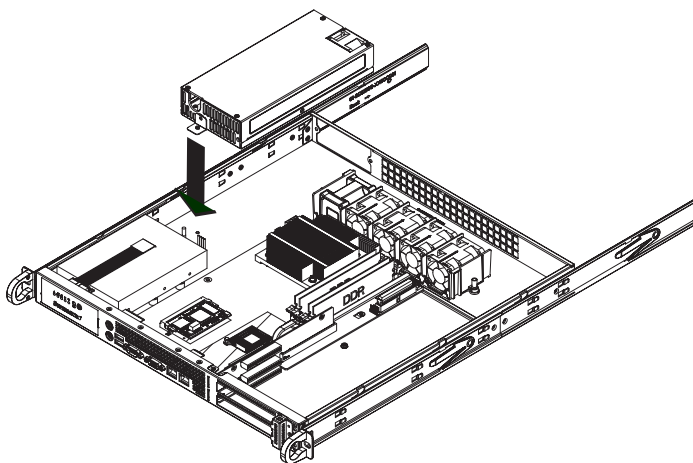


Figure 5-9: Removing the Power Supply

Replacing The Power Supply

1. Disconnect the power cord from the from the chassis to ensure that the unit is not accidentally plugged in.
2. Place the chassis on a stable hard surface and remove the chassis cover.
3. Disconnect the power supply from the motherboard and other chassis components.
4. Remove the screws securing the power supply. Two screws are in the back of the chassis and one is underneath. Retain the screws and the internal brace that connects the power supply to the chassis from underneath.
5. Pull the power supply out of the chassis.
6. Place the new power supply into the chassis and secure the power supply using the three screws and internal brace.
7. Connect the power supply to the motherboard and other chassis components.
8. Connect the power cord to the power supply and power up the chassis.
9. Once you confirm that the power supply has been installed correctly, replace the chassis cover.

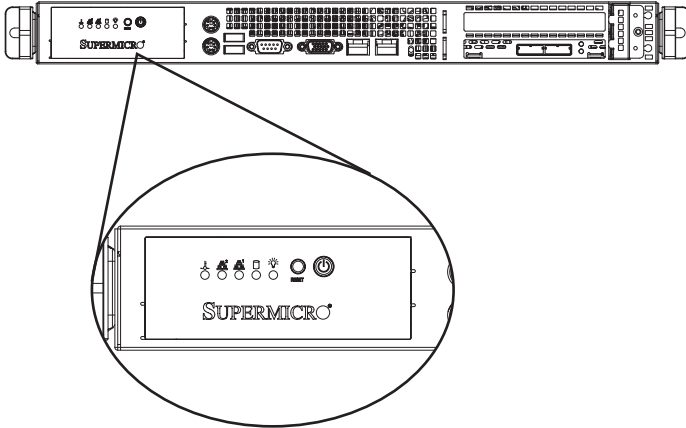


Figure 5-10: Chassis LEDs and Buttons

Replacing Chassis LEDs and Buttons:

In the unlikely event that the chassis LEDs and buttons fail, you can replace the front panel. Replacement parts can be ordered from Supermicro or an authorized reseller.

Replacing the Front Panel.

1. Unplug the system from any power source.
2. Remove the chassis cover.
3. Disconnect the cord to the front panel.
4. Locate and remove the three screws holding the panel in place. It may be necessary to remove the hard drive in order to remove the front panel. See the Installing the Hard Drive section of this manual for instructions.)
5. Install the new LED panel and secure the unit with three screws.
6. Reconnect the cables to the LED panel and if necessary, replace the hard drive.

Notes

Chapter 6

Rack Installation

6-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following these steps in the order given should enable you to have the system operational within a minimal amount of time.

6-2 Unpacking the System

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold your chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

6-3 Preparing for Setup

The box your chassis was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).



Warnings and Precautions!



Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug hard drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (T_{mra}).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

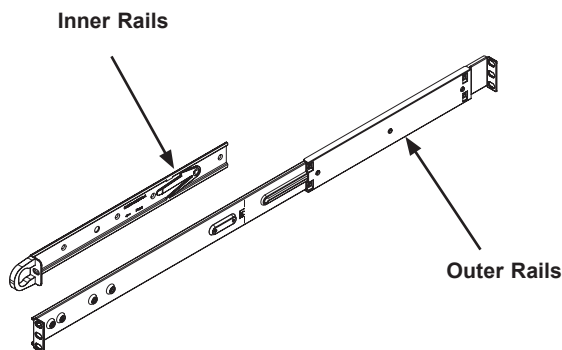
6-4 Rack Mounting Instructions

This section provides information on installing the SC515U chassis into a rack unit with the rails included. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

NOTE: This rail will fit a rack between 26" and 33.5" deep.

Identifying the Sections of the Rack Rails

The chassis package includes two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.



**Figure 6-1: Identifying the Sections of the Optional Rack Rails
(Right side rail shown)**

Installing the Inner Rail Extension

The SC515U includes inner rails, which are pre-installed on the chassis. The inner rail extensions extend the length of these inner rails, allowing them to be rack mounted.

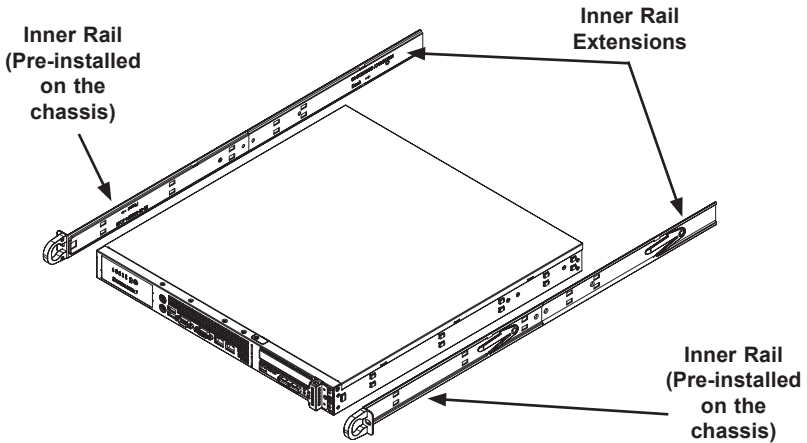


Figure 6-2: Installing the Rack Rails

Installing the Inner Rail Extensions

1. Place the inner rail extension on the side of the chassis, aligning the hooks of the chassis with the rail holes.
2. Slide the rail toward the front of the chassis to secure the rail in place.
3. Secure the chassis with two screws.
4. Repeat steps 1-3 for the other inner rail extension.

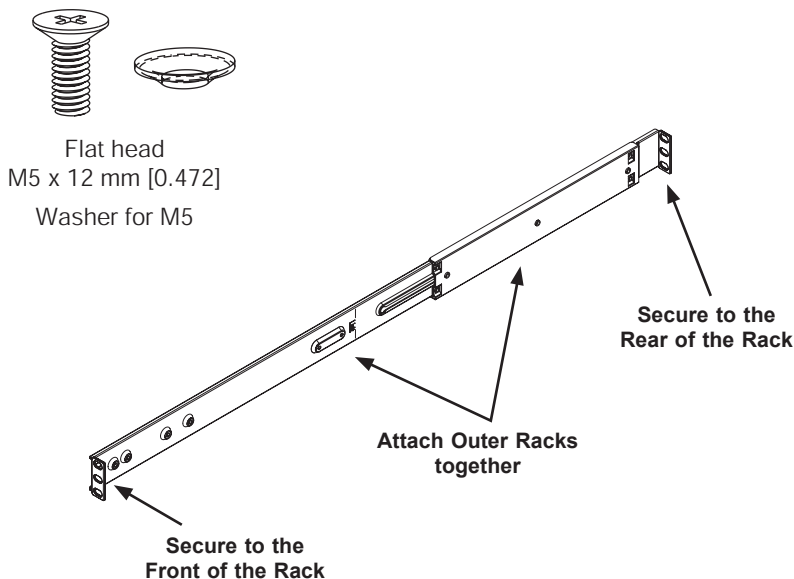


Figure 6-3: Assembling the Outer Rails

Installing the Outer Rails

Installing The Outer Rails To The Rack

1. Attach the short bracket to the outside of the long bracket. You must align the pins with the slides. Also, both bracket ends must face the same direction.
2. Adjust both the short and long brackets to the proper distance so that the rail fits snugly into the rack.
3. Secure the long bracket to the front side of the outer rail with two M5 screws and the short bracket to the rear side of the outer rail with three M5 screws. Use a washer with each screw.
4. Repeat steps 1-4 for the left outer rail.

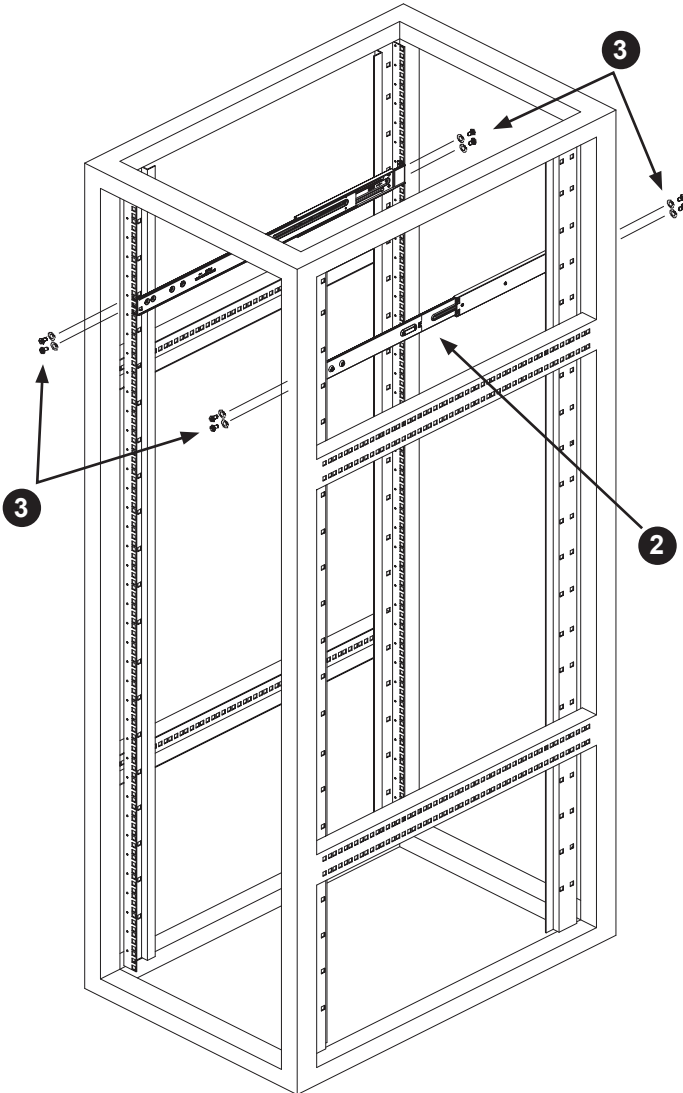


Figure 6-4: Installing the Outer Rails to the Server Rack

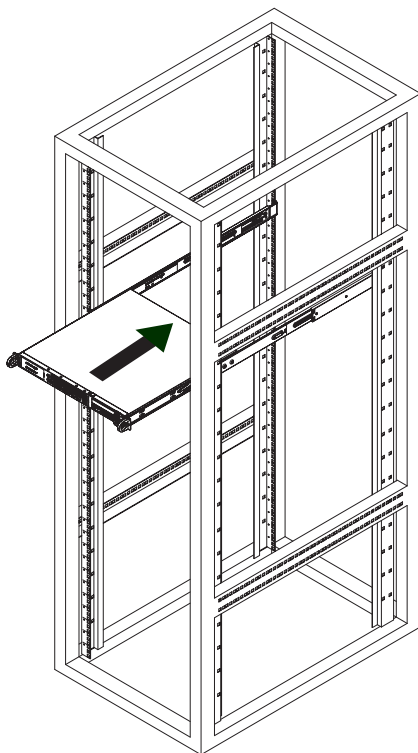


Figure 6-5: Installing the Chassis into a Rack

Installing the Chassis into a Rack

Rack Installation

1. Confirm that chassis includes the inner rails. Also, confirm that the outer rails are installed on the rack.
2. Align the chassis rails with the front of the rack rails.
3. Slide the chassis rails into the rack rails, keeping the pressure even on both sides. You may have to depress the locking tabs when inserting the rails. When the server has been pushed completely into the rack, the locking tabs should click into position.
4. (Optional) Insert and tighten the thumbscrews that hold the front of the server to the rack.

Installing into a Mid-Position Open (Telco) Rack

When installing the chassis into a mid-position open rack, such as a Telco rack, use only front portion of outer rail. It is not necessary to use the rear portion of the rail to secure the chassis.

Installing the Chassis into a Mid-Position Rack:

1. Locate the three L-brackets which are included in the chassis accessories box.
2. Determine how far the server will extend out of the front of the rack. Larger chassis should be positioned so that their weight is centered, balancing between the front and the back of the rack.

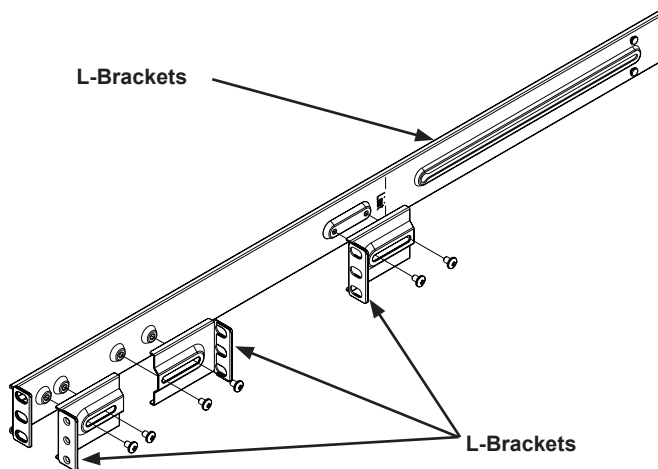


Figure 6-6: L-Bracket Positions on the Outer Rail

3. Attach two L-brackets to rear of the outer rail, allowing just enough space to accommodate the width of the rack.

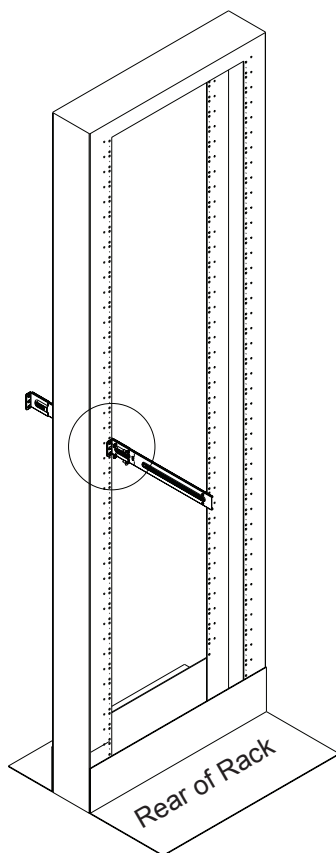


Figure 6-7: Installing the Outer Rail

4. Attach the front L-bracket to the front end of outer rail. This will secure the chassis and prevent it from sliding out of the rack.

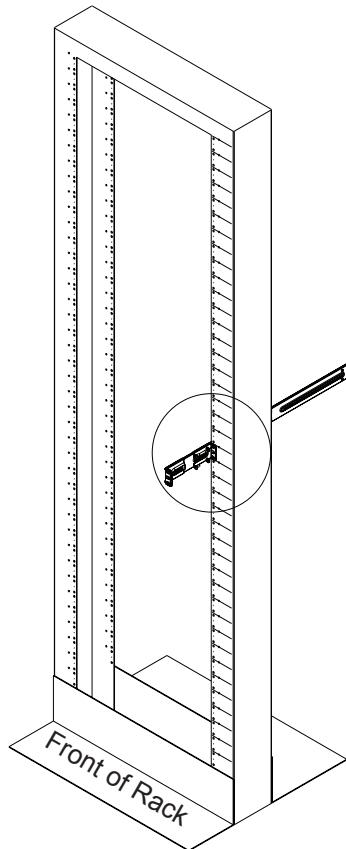


Figure 6-8: Installing Brackets Two and Three

5. Using the same procedure used on the first outer rail, secure the second outer rail to the rack, using the three remaining L-brackets.
6. Slide the chassis into the rack and tighten the brackets.

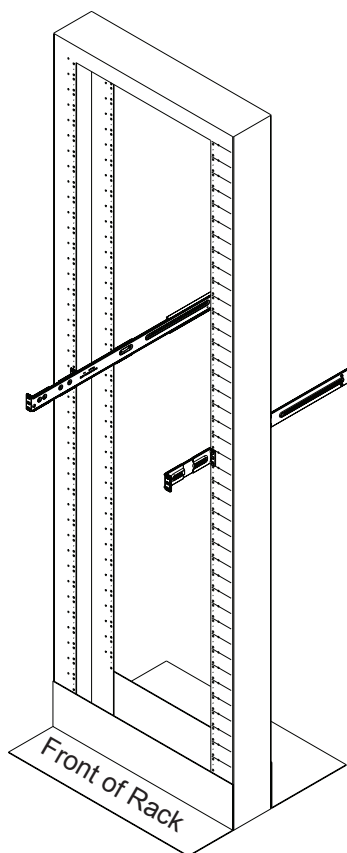


Figure 6-9: Outer Rail Installation Completed

Appendix A

Cables, Screws, and Accessories

A-1 Overview

This appendix lists supported cables for your chassis system. It only includes the most commonly used components and configurations. For more compatible cables, refer to the manufacturer of the motherboard you are using and our Web site at: www.supermicro.com.

A-2 Optional 2.5" Hard Disk Drive Tray

SC515-280UB	
Part #	Description
MCP-220-00051-ON	Hard disk drive tray supporting one 2.5" hard disk drive.
MCP-220-00044-ON	Hard disk drive tray supporting two 2.5" hard disk drives.

A-3 Cables Included with SC515U Chassis

SC515-280UB			
Part #	Type	Length	Description
CBL-0142L	Cable	30 cm (~12")	Seven pin SATA with two 90 degree side connectors. Lead free.
CBL-0156L	Cable	40 cm	16 pin to 16 pin FP Cable. Lead Free.
CBL-0084L	Wire	9 cm	DVD Cable. Lead free.
-	Cable	6'	Regional power cord

Extending Power Cables

Although Supermicro chassis are designed with to be efficient and cost-effective, some compatible motherboards have power connectors located in different areas.

To use these motherboards you may have to extend the power cables to the mother boards. To do this, use the following chart as a guide.

Power Cable Extenders		
Number of Pins	Cable Part #	Length
24 pin	CBL - 0042	7.9"(20 CM)
20 pin	CBL - 0059	7.9"(20 CM)
8 pin	CBL - 0062	7.9"(20 CM)
4 pin	CBL - 0060	7.9"(20 CM)

Front Panel to the Motherboard

The SC515U chassis includes a cable to connect the chassis front panel to the motherboard. If your motherboard uses a different connector, use the following list to find a compatible cable.

Front Panel to Motherboard Cable (Ribbon Cable)		
Number of Pins (Front Panel)	Number of Pins (Motherboard)	Cable Part #
16 pin	16 pin	CBL - 0049
16 pin	20 pin	CBL - 0048
20 pin	20 pin	CBL - 0047
16 pin	various*	CBL - 0068
20 pin	various*	CBL - 0067

* Split cables: Use these cable if your motherboard requires several different connections from the front panel.

A-4 Chassis Screws

The Chassis and accessory box include all the screws needed to setup your chassis. This section include descriptions of the most common screws used. Your chassis may not require all the parts listed.

M/B



Pan head
6-32 x 5 mm
[0.197]

HARD DRIVE



Flat head
6-32 x 5 mm
[0.197]

DVD-ROM CD-ROM FLOPPY DRIVE



Pan head
6-32 x 5 mm
[0.197]



Flat head
6-32 x 5 mm
[0.197]



Round head
3 x 5 mm
[0.197]



Round head
2.6 x 5 mm
[0.197]

RAIL



Flat head
M4 x 4 mm
[0.157]



Round head
M4 x 4 mm
[0.157]



Flat head
M5 x 12 mm [0.472]
Washer for M5



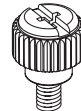
M/B STANDOFF



M/B standoff
6-32 to 6-32



M/B (CPU) standoff
M5 to 6-32



Thumb screw
6-32 x 5 mm [0.197]

Notes

Appendix B

Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

280W AC to DC High-Efficiency Power Supply	
MFR Part #	PWS-281-1H
Rated AC Voltage and Maximum Output Power	100 - 140V/180-240V 330W 50 - 60Hz 5 Amp
+5V standby	2 Amp
+12V	23Amp @ 100-140V, 27Amp @ 180-240V
+5V	18 Amp
+3.3V	15 Amp
-12V	1 Amp

Disclaimer (cont.)

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